AMENDMENTS TO THE CLAIMS

In the claims:

1. (CURRENTLY AMENDED) A semiconductor structure comprising: a substrate and a Sn_xGe_{1-x} layer formed ~~over~~ directly on the substrate, wherein x has a value from about 0.02 to about 0.20, and wherein the substrate consists essentially of silicon.

2. (ORIGINAL) The semiconductor structure of claim 1 wherein the Sn_xGe_{1-x} layer is an epitaxial layer with a direct band gap between about 0.72eV and about .041eV.

3. (ORIGINAL) The semiconductor structure of claim 1, wherein x has a value of about 0.20 and the Sn_xGe_{1-x} layer is a direct-gap material.

4. (CANCELLED)

5. (CURRENTLY AMENDED) The semiconductor structure of claim 4 wherein the substrate ~~comprises~~ consists essentially of Si(100).

6. (CURRENTLY AMENDED) The semiconductor structure of claim 4 wherein the substrate ~~comprises~~ consists essentially of Si(111).

7. (CANCELLED)

8. (CANCELLED)

9. (CANCELLED)

10. (ORIGINAL) The semiconductor structure of claim 1 wherein the Sn_xGe_{1-x} layer has a thickness of about 50nm to about 1000nm.

11. (ORIGINAL) The semiconductor structure of claim 1 further comprising a strained Ge layer formed over the Sn_xGe_{1-x} layer.

12. (ORIGINAL) The semiconductor structure of claim 11 wherein x is greater than about 0.11 and the strained Ge layer is a direct-gap material.

13. (CURRENTLY AMENDED) A semiconductor structure comprising: a discontinuous Ge-Sn quantum structure formed over a silicon substrate.

14. (ORIGINAL) The semiconductor structure of claim 13 wherein the Ge-Sn quantum structure comprises $Ge_{1-x}Sn_x$ and x has value from about 0.02 to about 0.03.

15. (ORIGINAL) The semiconductor structure of claim 13 wherein the Ge-Sn quantum structure is formed over Ge-Sn epitaxial layer formed over the silicon substrate.

16. (ORIGINAL) The semiconductor structure of claim 13 wherein the substrate comprises Si(100).

17. (ORIGINAL) A method for depositing an epitaxial Ge-Sn layer on a substrate in a chemical vapor deposition reaction chamber, the method comprising introducing into the chamber a gaseous precursor comprising SnD_4 under conditions whereby the epitaxial Ge-Sn layer is formed on the substrate.

18. (ORIGINAL) The method of claim 17 wherein the gaseous precursor comprises SnD_4 and high purity H_2.

19. (CURRENTLY AMENDED) The method of claim 17 wherein the gaseous precursor further comprises high purity H_2 of about 15-20 by volume.

20. (ORIGINAL) The method of claim 17 wherein the gaseous precursor is introduced at a temperature in a range of about 250°C to about 350°C.

21. (ORIGINAL) The method of claim 17 wherein the substrate comprises silicon.

22. (ORIGINAL) The method of claim 17 wherein the substrate comprises Si(100).

23. (ORIGINAL) The method of claim 17 wherein the Ge-Sn layer comprises Sn_xGe_{1-x} and x is in a range from about .02 to about .20.

24. (ORIGINAL) A method for depositing a strained Ge layer on a silicon substrate with a Ge-Sn buffer layer in a chemical vapor deposition reaction chamber, the method comprising introducing into the chamber a combination comprising SnD_4 and Ge_2H_6 under conditions whereby the Ge-Sn layer is formed on the substrate and dehydrogenating Ge_2H_6 under conditions whereby the Ge layer is formed on the Ge-Sn buffer layer.

25. (NEW) The semiconductor structure of claim 1, wherein the Sn_xGe_{1-x} layer is relaxed.

26. (NEW) The semiconductor structure of claim 1, wherein the Sn_xGe_{1-x} layer is epitaxial.

27. (NEW) The semiconductor structure of claim 26, wherein the substrate is accommodated by Lomer edge dislocations.

28. (NEW) The semiconductor structure of claim 1, wherein the Sn_xGe_{1-x} layer lattice parameters are about 5.672 Å to about 5.833 Å.

29. (NEW) The method of claim 17 wherein the gaseous precursor comprises SnD_4 and Ge_2H_6.

30. (NEW) The semiconductor structure of claim 1, wherein the Sn_xGe_{1-x} layer is atomically flat.